



Conservation Education Teacher Guide

FREDDIE THE FISH

Participants will follow Freddie the Fish downstream to gain an understanding of the importance of clean water, ways in which we pollute the water, and the impacts pollution has on wildlife. This activity provides a very tangible demonstration of what happens when we don't take care of our environment.

THE PATH OF POLLUTION!

Pollution will take the easiest path to continue its non-stop journey of destruction. Sometimes it is hard to find out where the pollution originated from. There are two major types pollution; point source pollution and nonpoint source pollution.

Point source pollution is a pollution which enters a water resource at a source which is identifiable. It comes from a distinct source with a direct route. An example is a pipe coming from a factory into a waterway. We know where the pollution is coming from and we can then find out the type.

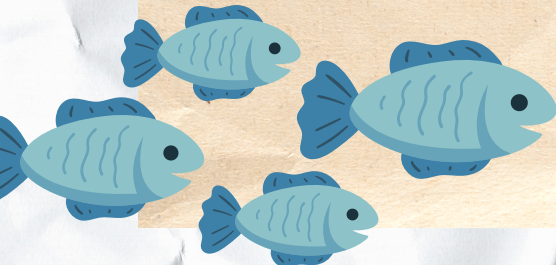
Other forms of point source pollution come from nuclear power plants and the vapor steam they emit which can affect air and surrounding water temperatures creating problems for local plant and animal life. Other sources of pollution are the misuse of storm drains in residential areas. Local home owners may use them as a disposal for used paint, oil, chemicals or other pollutants. Another form of point source is from a sewage treatment plant. At times of heavy rain or plant operation malfunction untreated sewage can enter local waterways changing bacteria and nutrient levels. The positive side of point source pollution is that it has been regulated by the federal government for over 20 years due to the Clean Water Act. Also, it is easier to identify the source of contamination for early clean up.

The larger problem we now face is nonpoint source pollution (NPS) which is pollution discharge that comes from an unknown source. NPS pollutants include nutrients such as nitrogen and phosphorus from fertilizers, erosion from soil sediments washing away from construction sites, pesticides from agricultural lands, automobile discharge (leaking oil, anti-freeze, or transmission oil), salt run off from our roads and driveways, and pollutants leaking from poorly designed landfills.

Since these pollutants are from areas which are hard to define, locate and correct, wider citizen involvement and dedication is necessary to help control this rising cause of pollution.

What can we do about it? We can seed and mulch areas where soil is barren to prevent it from washing away. We can reduce the amount of fertilizers, pesticides and use environmentally friendly household cleaners at home. We can regularly schedule tune ups and oil changes to ensure our vehicles are running properly.

In 1987 provisions were made to the Clean Water Act stating that state NPS management programs are to address the problem of NPS pollution. Although it is still solely the responsibility of volunteer agencies and local government and concerned citizens.



Vocabulary

- Erosion—Process in which land is worn away by external forces, such as wind, water or human activity.
- Point Source Pollution—Waste, often made by humans, that damages the water, air and the soil.
- Non-point Source Pollution—A waste discharge that comes from an unknown source.
- Runoff— Rainwater that flows over the land and into waterways, picking up soil particles along the way and dumping them into the streams.
- Sediment— Soil and debris from construction sites, mining operations, croplands, logging operations, stream bank erosion.

Pre-Visit Activity— Mingle, Mingle

- Objective—After completing this activity, students will be able to understand how oil (pollution) and water (waterways) do not mix.
- Preparation—You will need enough sheets of blue paper for two-thirds of the class making them water (our waterways). You will need black sheets (oil) for the remaining students.
- Ask students to list different types of pollution. Ask students to explain and give examples of a waterway.
- Assign the waterways and oil and have the students tape the sheets onto their shirts.
- Explain that when you call out “elbow to elbow”, the water must find another water and connect elbows and same for the oil. If they cannot find another water or oil they are out of the activity and they can assist with calling out parts to connect.
- When the children are ready have them begin to snap their fingers and walk about the room saying “Mingle, Mingle”.
- Call out “elbow to elbow”, etc. continuing to call out body parts to connect. Repeat this activity at least three to four times This demonstrates to the students that water and oil do not mix.
- Wrap up—Have a glass container and add water to it then ask the students what do they think will happen when oil is added to it?

Post-Visit Activity— How does it feel?

- Have students draw pictures of Freddie’s journey and write down adjectives to explain how he might feel at each stage of his adventure.
- Have students come up with things they can do at home to help prevent water pollution. Are there things that they know someone does that might pollute our water? How could they help them to pollute less?
- Have a class discussion on ways to clean up a polluted stream and how could the pollution been prevented.

Ohio Learning Standards, Ohio
Revised Science Standards and
Model Curriculum

Geauga SWCD

Mission:

“To conserve, protect, and enhance the resources of Geauga County by providing leadership, education, and assistance to all.”

Kindergarten

Earth and Space Sciences: 1
Life Sciences: 1,2

First Grade

Earth and Space Sciences: 2
Life Sciences: 1,2

Second Grade

Earth and Space Sciences: 2
Life Sciences: 1

Third Grade

Earth and Space Sciences: 3
Life Sciences: 2, 3

Fourth and Fifth Grade

Life Sciences: 1

Sixth Grade

Physical Sciences: 4

Seventh Grade

Earth and Space Sciences: 1
Life Sciences: 2

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